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HISTORICAL FUND
of the
NAVY MEDICAL DEPARTMENT

A committee has been formed with representation from the Medical Corps, Dental Corps, Medical Service Corps, Nurse Corps, and Hospital Corps for the purpose of creating a fund to be used for the collection and maintenance of items of historical interest to the Medical Department. Such items will include, but will not be limited to, portraits, memorials, etc., designed to perpetuate the memory of distinguished members of the Navy Medical Department. These memorials will be displayed in the Bureau of Medicine and Surgery and at the National Naval Medical Center. Medical Department officers, active and inactive, are invited to make small contributions to the fund. It is emphasized that all donations must be on a strictly voluntary basis. Funds received will be deposited in a Washington, D. C. bank to the credit of the Navy Medical Department Historical Fund, and will be expended only as approved by the Committee or its successor and for the objectives stated.

It is anticipated that an historical committee will be organized at each of our medical activities. If you desire to contribute please do so through your local historical committee or send your check direct, payable to Navy Medical Department Historical Fund, and mail to:

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Value of Aminopyrine

Modern medical science has made such tremendous strides in the field of therapeutics that many older drugs, especially if potentially productive of untoward and dangerous side effects, have been discredited and fallen into disuse. Admittedly, many such drugs have marked therapeutic value and are deserving of further investigation and clinical trial before they are completely discarded.

Aminopyrine, by force of historical circumstances, has been such a discredited drug for many years. The danger of agranulocytosis resulting from its use is real and well established, but undoubtedly has been overemphasized. Its value as a potent antipyretic is well known and needs no extensive elaboration. The purpose of this article is to show that aminopyrine may be effective where other antipyretics have failed, but particularly that, by means of its potent antipyretic properties, acting in a purely nonspecific manner, it may be a life-saving drug under conditions in which even the most powerful and specific of the newer drugs have failed.

It is not the purpose to encourage the resumption of the widespread indiscriminate and uncontrolled use which this preparation once enjoyed, but to show that under carefully controlled clinical conditions it is still a uniquely valuable drug which deserves to be remembered and used in particular circumstances by all physicians.

Aminopyrine has long been known as an effective antipyretic and analgesic. It is a pyrazolone compound which in many ways resembles the salicylates in general pharmacologic properties. Administered orally, it is rapidly excreted, and after moderate doses it appears in the urine after two hours. Long-continued administration has no cumulative effect nor is there an increase in tolerance. Antipyretic effects of the drug are achieved by direct action on the hypothalamus through its effect on the thermoregulating centers in the brain, rather than by any primary effect on heat production or heat dissipation.

Aminopyrine has been discredited because of its toxic effects on bone marrow with the production of leukopenia, neutropenia, and agranulocytosis which sometimes proved fatal. Aminopyrine was the first of a series of drugs to be associated with this toxic complication. Most of these cases of severe reaction were reported between 1930 and 1940 when the drug was sold indiscriminately over the drug store counter. During this period also, the drug was often included in proprietary preparations for self-medication.

Aminopyrine has been administered in a variety of febrile diseases, including measles, rheumatic fever, pneumonia, influenza, scarlet fever, meningitis, and malaria; except in the last, it was found effective in controlling fever. In measles, aminopyrine was so effective that some investigators regarded it as specific therapy, but others reported that the natural

course of this disease was not affected. Before the advent of the corticosteroids, the use of aminopyrine in rheumatic fever was investigated with the consensus that in those cases where symptoms were refractory to salicylates or when salicylism occurred, aminopyrine was the drug of choice. Some investigators believed aminopyrine to be the drug of choice in most cases of rheumatic fever because it acted more promptly, was effective in smaller doses, and produced fewer toxic effects than did the salicylates.

Like the salicylates, aminopyrine reduced the pain, immobility, swelling and inflammation of the joints, but did not benefit the cardiac lesions or the subcutaneous nodules.

Whether the favorable effect of aminopyrine on a wide variety of unrelated diseases is entirely due to its nonspecific action as a potent antipyretic, or whether a more fundamental action is involved, and whether it acts in a manner similar to, or by stimulating, the secretion of corticotropin and corticosteroids are unknown, and remain as problems for the future.

As is well known, agranulocytosis as a reaction to, or side effect of, drug action is not peculiar to aminopyrine alone, but occurs frequently in conjunction with other commonly used medicaments, such as the sulfonamides, chloramphenicol, streptomycin, thiouracil derivatives, Mesantoin and Tridione, the antihistamines and other important medicaments. This possible complication to the use of such drugs has banned only their careless or unsupervised use, not their cautious and controlled administration with full knowledge of their possible harm balanced against their favorable action in certain disease states.

The danger of agranulocytosis from the use of aminopyrine is no less real today than in the past, but its actual incidence is very small, and the treatment of this condition (with antibiotics, corticosteroids, and ample available supplies of blood for transfusion), should it occur, is more successful than formerly. Moreover, it need not occur at all if the drug is given under strict supervision with frequent blood studies during the period of its administration.

The most commonly used alteratives today for the symptomatic treatment of fever and its associated symptoms and for other nonspecific symptoms are corticotropin and the corticosteroids. These have been accepted enthusiastically and to a great degree uncritically by the medical profession, and are widely used. Without the intention to detract in any way from their amazing value and spectacular and even life-saving effects under proper conditions and indications, it may, nevertheless, be truthfully stated that the final story of their morbidity and mortality has yet to be told. They carry with their use the real and frequent danger of edema, hypertension, heart failure, diabetes, perforation and massive hemorrhage of peptic ulcer, exacerbation of healed and latent tuberculosis, and other infections, phlebothrombosis, psychosis, adrenal insufficiency, atrophy, and hypercortosonism;

and many patients have died and are dying daily directly or indirectly from their use. The actual incidence of these serious and occasionally fatal effects is astronomically greater than the incidence of agranulocytosis from the use of aminopyrine.

Of the six cases reported in this review, two were cases of acute exacerbation of rheumatic carditis, one of ulcerative colitis and rheumatic heart disease; one of periarteritis nodosa, and two of visceral (pancreatic) neoplasm. It is in just such conditions in which the antibiotics are not effective that aminopyrine may be of particular value. In general, the authors found its effect to be most striking in the virus, collagen, neoplastic, and other nonbacterial diseases associated with fever. In bacterial infections, also, it is frequently effective in controlling fever and its associated symptoms, but it may fail in fulminant or terminal infections. Today, in all of these conditions cortocotropin or the corticosteroids would no doubt be resorted to first; but these preparations are expensive and, as stated, not without considerable risk; in some cases, they cannot be given because of a known contraindication to their use in a particular patient. In such circumstances, and in any case where fever per se is an essential problem, and the other metabolic and alterative effects of the cortocosteroids are not particularly required, a preliminary trial of aminopyrine may be of value.

Aminopyrine is still a uniquely valuable and occasionally life-saving antipyretic which deserves a trial whenever fever is a significant feature of the clinical picture of disease. It may be effective under conditions in which other antipyretics and even the most powerful and specific of the newer drugs fail. The danger of agranulocytosis from its use—although real—has been overemphasized and is no greater than with many other drugs in common use today. Aminopyrine has its place in therapeutics under well controlled clinical conditions and under the supervision of a physician, but its careless and indiscriminate use is to be condemned. (Cardon, L., et al., Value of Aminopyrine, Ann. Int. Med., 48: 616-632, March 1958)

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Occurrence of Arrhythmias

Only those with clinical evidence of acute myocardial infarction, such as pain, fever, leukocytosis, and elevated sedimentation rate were included in this study. All had definite electrocardiographic evidence of acute infarctions. A total of 187 patients were selected as fulfilling these criteria. They were studied from a standpoint of occurrence as arrhythmias in relation to location of the infarction, hypertension, sex, age, mortality, and other complicating factors, such as cardiac failure and shock. The most common type of arrhythmias was auricular fibrillation. It occurred in 16 (8.7%) of 187 patients. There was an incidence of 8 (9.1%) of 89 with anterior infarction

and 8 (8.2%) of 98 with posterior infarction. Atrioventricular block was noted in 11 (5.9%). Of these, only one occurred with anterior infarction. Ten (10.1%) of 98 patients with posterior infarction had heart block, in seven of whom it was complete. Because the right coronary artery supplies the atrioventricular node in 92% of patients, nearly all cases of atrioventricular block are associated with posterior artery occlusions.

Ventricular tachycardia was recorded in only one instance, this was in a patient with posterior infarction. He also developed a nodal tachycardia during his stay in the hospital. One case of auricular flutter was noted. In various series in the literature, the incidence of flutter has been reported from 1 to 4.3%.

There was no case of auricular tachycardia identified in this series, however, there were two with nodal rhythms. These types of arrhythmias have been reported to be uncommonly associated with acute myocardial infarctions.

Hypertension (blood pressure over 160/90) was found in 56 (29.9%) of the patients. Of these, there was an incidence of 31.9% with an anterior infarction and 29% with posterior infarction. Another complicating factor, appearing with almost equal frequency in both anterior and posterior infarction, was shock with a total incidence of 14.5%. There was 13.5% in anterior infarction, and 15.5% in posterior infarction. Heart failure occurred in 29 (15.5%). Of those with heart failure, 18 (20.2%) were in the group with anterior infarction and 11 (11.2%) in the posterior infarction cases.

The over all mortality was 23.5% in 187 patients. The mortality of those with arrhythmias was 29% (9 of 31 cases) while the rate in those without arrhythmias was 22.4% (35 of 156 cases). The rate in all patients with anterior infarctions was 29.2% and in posterior infarction, it was 18.3%. There was a mortality of 20.3% among the men and 33.3% among the women. Anterior infarction caused deaths more frequently in men than did posterior, 26.8 to 15.6%, respectively. Mortality was essentially the same in women with either anterior or posterior infarctions, 34.5 to 31.5%. Patients having heart failure and myocardial infarction had a higher mortality (49%). In those in whom shock occurred, mortality was 52%, and in those with auricular fibrillation, it was 31%.

Mortality is distinctly higher when heart block occurs. Mintz and Katz reported 100%, but Bellet found recoveries were not so rare. In this series, two of seven cases with complete heart block, one of first degree block and the one with sino-auricular block, died. Rosenbaum and Levine reported that once heart block develops in association with acute myocardial infarction and the patient survives, complete recovery from the block or a lesser degree of block tends to be the ultimate outcome. Graybiel and White found 10% of patients with complete heart block had had myocardial infarctions.

The exact mechanisms of arrhythmias remain unknown. However, the two factors principally involved in auricular fibrillation are increased parasympathetic stimulation of the vagus and anoxia of the myocardium. Of these factors, anoxia would seem the more important in myocardial infarctions. Schlichter observed the development of auricular fibrillation in a case of anemia and its disappearance after blood transfusion. According to Luisada, the most common cause of infarction is slow, gradual occlusion of an arteriosclerotic vessel by the concentric proliferation of the intima. Anoxia of the myocardium is the result. The common association of atrial infarction with supraventricular arrhythmias would only serve to support the theory that anoxia is a likely etiologic factor. Because arrhythmias usually do not begin until several hours after infarction, Harris believes that possible sympatho-adrenal substances liberated during necrosis of the muscle act as excitatory factors on the vagus to produce auricular fibrillation. The treatment of these arrhythmias has been well covered in the literature. Hence no attempt is made to evaluate the treatment in this study.

The authors believe that the dangers of the use of digitalis in patients with acute myocardial infarctions have been overemphasized. They agree with Askey that quinidine should be given with digitalis, especially when premature beats appear. The fear of the production of ventricular tachycardia has deterred many physicians from using digitalis in acute infarctions when complicated by heart failure or auricular fibrillation. Gilson and Schemm administered digitalis to patients with heart failure and ventricular tachycardia and found that the tachycardia disappeared and the heart failure was controlled. The authors believe that both digitalis and quinidine are contraindicated in the presence of complete heart block. (Johnson, C. C., Miner P. F., The Occurrence of Arrhythmias in Acute Myocardial Infarctions: Dis. Chest., XXXIII: 414-420, April 1958)

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Electrocardiographic Misinterpretation

There is constant improvement in the methods of producing electrocardiograms; in general, equipment has kept pace with advances in the electronic engineering sciences. High fidelity instruments are now available and may yield useful information in certain cardiac conditions not discovered by conventional equipment.

Electrocardiograms can be taken at the patient's bedside and sent over local and long distance telephone lines, or they may be stored on magnetic tape and later sent over telephone or other lines. Electrocardiograms can be sent by radio; tracings can be taken from pilots or passengers in flight and simultaneously transmitted to receiving stations.

It is believed that 65,000 individuals are reading and interpreting electrocardiograms today; most of these are physicians who have had one or more special courses of study. More than 50 such postgraduate courses are listed in a recent survey. There are probably 200 additional nonuniversity and unlisted private courses available to those who may be interested in reading tracings made by their newly acquired machines and by those not qualified for higher level study. There is a relatively large group of technicians, laboratory workers, and nonmedical scientists who also interpret electrocardiograms as a part of their job.

Since the end of World War II, 46 new books on electrocardiography have been published. Nineteen books on heart disease also have appeared; many of these devote large sections to electrocardiography. From 1945 to 1955, about 3200 articles in whole or part have been written on the subject in the available world literature.

This is the role of electrocardiography today. All of these statistics, gathered presumably from reliable sources, are presented merely to emphasize and to place in perspective the widespread and perhaps awesome interest displayed by both the medical profession and the laity in a purely technical procedure which still has many scientific blind spots.

No one would seriously question the place of the electrocardiogram in the diagnosis of the various cardiac disabilities. Having struggled so much in the early days of applied clinical electrocardiography to prove its worth, the author does not deprecate the important place it has occupied in medicine during the past thirty years, but as one of the surviving pioneers in this field of applied laboratory medicine and, thus sharing the initial responsibility of the procedure, he is apprehensive lest the pendulum should swing too far from the center of common sense and medical experience. He is especially concerned about the T wave and the grave implications currently accepted in the significance of certain changes which may be found in the terminal ventricular complex of the electrodynamic cycle. He is disturbed about the fate of many men who have given up large and small business enterprises and who have been urged into fretful retirement because of a diagnosis based in whole or in part on the interpretation of a T wave.

What are basic facts about these T waves? The author is not concerned with the conduction disturbances or with the various irregularities of rhythm; he does not touch on the characteristic electrodynamic changes which develop as the result of acute coronary occlusion. These are all well integrated in the clinical syndromes associated with these conditions. He discusses only the current tendency to consider alterations in the T wave as an entity self-sufficient unto itself.

What is the T wave? The T wave—in contrast to all other components of the electrodynamic cycle—still offers challenge in regard to its mode of origin. Most authors accept the theory of repolarization following the termination of the excitatory process in the ventricular myocardium. Unlike the

rapid depolarization phenomena associated with the spread of the electric gradient over the specialized pathways in the heart muscle and represented by the QRS complex, the development of the T wave is predicated on the summation of an infinite number of electrolytic adjustments to constantly changing differences of potential, both within and without the cell membrane. Each cell apparently has a different gradient of electrochemical restoration and at any given instant in time, the total differences of potential will depend on negative or positive vector predominance. The T wave is apparently more responsive to disturbances of myocardial physiology than any other component of the electrodynamic cycle.

Before reviewing the various conditions in which the T wave may become "abnormal," a working definition of the normal electrocardiogram with special attention to the terminal ventricular complex is necessary. Kossmann, in a recent discussion of the normal electrocardiogram, points out that a distinction must be made between the normal heart and the "so-called normal electrocardiogram." Most electrocardiographers accept the concept that the T wave is normally upright in all leads except aVR and perhaps V_1 and V_2 in young people; T_3 may also be inverted in certain individuals. However, the official criteria of the New York Heart Association broaden the base of the list of T wave directional changes which may be considered normal; leads I, III, aVI, aVF, V_1, V_2, V_3, and V_4 may show such alterations in normal subjects. Graybiel, McFarland, and Gates found abnormal T waves in healthy young aviators; the author reported similar findings in Naval and Marine Corps personnel. In brief, it is possible, therefore, to find both minor and completely "abnormal" changes in the T waves in eight of the routine 12 leads in healthy individuals; these changes may occur in one or multiple leads. They do not represent heart disease and they cannot be interpreted in terms of cardiac disability. They simply represent an individual electrocardiographic pattern of a given heart and are thus normal within the framework of specific definition.

Can the T wave become grossly abnormal in configuration as the result of benign factors? It has long been known that simple vagal stimulation may cause remarkable alterations in the terminal ventricular complex in certain responsive subjects; Scott and Reed produced abnormal T waves by carotid sinus pressure. Morton and his associates showed similar findings in resection of the vagus nerve. Lepeschkin showed the interrelationship between hiccups and such electrocardiographic changes. Melchelke and Meitner, using sympathomimetic drugs, produced vagotonic reactions which were reflected in the T waves. Peter also used sympathicolytic substances in determining the responsiveness of the neurovegetative system in relation to the electrocardiogram.

The classic iced water experiment of Wilson and Finch was recently repeated by Dowling and Hellerstein. They concluded that the T wave negativity produced by the drinking of moderately large amounts of cold liquids

was due to a delay in repolarization of the posterior wall of the heart. The effects of cold on the heart have been widely studied because of this T wave responsiveness. A military team of investigators has just reported a series of studies made under arctic conditions of long exposure to sub-zero environment; here again, T wave abnormalities were noted. Of considerable interest in this connection has been the development of hypothermic anesthesia with particular reference to cardiac surgery. Berne has shown T wave negativity at such lowered body temperatures. Lange, Weiner, and Gold have confirmed these changes in experimental animals. Finally, Lepeschkin points out that intravenous injection of cold solutions may be productive of many T wave abnormalities.

Eating as well as drinking may cause T wave changes. Postprandial alterations in the electrocardiogram have been known for years. In 1933, Gardberg and Olsen showed that heavy meals—presumably by vagal reflex action—could produce remarkable T wave changes. Simonson, Alexander, and Henschel, in 1946, confirmed this finding. Rochlin and Edwards and, more recently, Levit and Dinman have demonstrated T wave changes in single and multiple leads after the ingestion of various amounts of food.

Psychosomatic aspects of T wave alterations also have been the focus of recent investigation. Various authors postulate autonomic nervous system imbalance.

Simple orthostatic factors may produce abnormalities of the T wave. Peterson found that certain subjects, on assuming a standing position after resting in a horizontal plane for more than ten minutes, may completely invert the T waves in several leads.

Finally, a word about simple deformities of the chest. The most common of these is sternal depression. Here, Botelho, Medeiros, and Amorim, in a review of the subject, have pointed out the frequency of T wave changes among other electrocardiographic alterations. In 1936, the author reported such T wave abnormalities in persons with so-called "chicken breast" orthopedic deformities.

In summary, such are the T wave changes which may be found in normal individuals under varying conditions of ordinary life stress. The list is by no means complete. Taken as a group, they represent abnormalities of the terminal ventricular complex which may have no pathologic counterpart; they are abnormal only by definition. It is here that the mythologic sanctity of the upright T wave exerts its malicious sphere of influence; and it is here that the inverted T wave, taken out of context and raised to an exalted clinical entity, has been responsible for so many broken lives and unnecessary financial burdens.

On the other side of this picture, are the multitude of unsubstantiated insurance and industrial claims of cardiac disability based in part or entirely on T wave changes. An instance is cited where a man has been collecting

permanent insurance disability for nearly twenty-two years because he has a flattened T wave in lead I.

The author is not concerned with T wave changes which are caused by, or are associated with, objective cardiovascular pathology, although there is a considerable clinical experience to suggest that even in certain instances the T wave abnormalities may have nothing to do with the predominant cardiac lesion. The importance of clinical electrocardiography is acknowledged, but the undue emphasis placed on the pseudoclinical sanctity of the upright T wave must be challenged by those who share the responsibility of preventing the entire concept of the electrocardiographic interpretation of heart disease from becoming a mockery both in the clinic and in the courts of law. The task of directing wise counsel in this rapidly growing field of medical science is placed on the teachers of medicine and those interested in maintaining the proper perspective concerning the limitations of this diagnostic procedure. (Hyman, A. S., Clinical Implications of Electrocardiographic Misinterpretation - Some Observations about T Wave Abnormalities: Reprint, New York State J. Med., 57:2659-2664, August 15, 1957)

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Acute Tubular Necrosis in Infancy and Childhood

Acute renal failure is a clinical syndrome characterized by the sudden onset of severe oliguria or anuria followed by the retention of excretory products. It may be due to either reversible or irreversible lesions in the kidneys or urinary passages. In the majority of cases, the lesion is reversible, provided an early diagnosis is made and appropriate management is instituted. Cases which prove to be irreversible may be very difficult to diagnose as such during life, particularly during the early course of the syndrome and, consequently, they often merit essentially the same plan of management as the former group.

Acute tubular necrosis is now recognized as an important cause of acute reversible renal failure. For many years, the existence of acute renal failure due to a variety of different etiological agents had been recognized; during the past 15 years, it has been established that degeneration in the epithelium of the renal tubule is the lesion common to these cases of acute renal failure. Likewise, similar pathogenetic mechanisms have been found to be involved in these diseases.

As a result of these advances, a new rationale of management of acute renal failure has evolved which is based on the fact that the renal lesion is reversible and survival depends upon prevention and control of complications during the period of renal dysfunction.

Acute renal failure due to acute tubular necrosis in infants and children is the subject of this article.

The cause of acute renal failure may be difficult to establish, particularly in the case in infants and small children in whom the etiology may not be obvious. There should be no problem, however, in cases in which the history points to a clinical situation known to precede acute tubular necrosis. A knowledge of the chemical agents which cause this renal lesion is important and parents must be specifically asked if their child has been exposed to, or had access to, poisons.

Oliguria and anuria due to dehydration, with or without salt depletion, are frequently seen in infants and small children, In the great majority of such situations, repair of the extracellular volume results in a prompt return of urine formation. To distinguish between oliguria due to dehydration and acute renal failure—when doubt exists—a catheter should be inserted into the bladder and an intravenous infusion of 5% dextrose in water, 350 ml. per square meter, should be given in 60 minutes. The rate of urine flow should be checked against the normal values for age noted in a table. Prompt return of flow to normal excludes acute renal failure.

In cases of acute renal failure in which the cause remains obscure, management should be based on the assumption that a reversible renal lesion exists. Under such circumstances, consideration should be given to the following conditions in differential diagnosis: Acute Glomerulonephritis, Acute Pyelonephritis, Hemorrhagic Papillary Necrosis, Obstructive Uropathies, Renal Vascular Lesions, and Reflex Anuria.

There is no specific therapy. Treatment is based on the assumption that the renal lesion is reversible and that survival depends upon avoiding or controlling the various physiological derangements that ensue when renal function is impaired.

The importance of early recognition of oliguria or anuria cannot be overemphasized. Case reports in the literature contain several instances of late diagnosis of oliguria in which the patient was first seen in a state of overhydration due to excess water or water and salt administration. The possibility of acute renal failure must be considered in all circumstances when the known etiological mechanisms prevail. The commonest of these are nephrotoxic agents, states of severe shock and dehydration, and increased blood and tissue destruction.

In cases due to nephrotoxic agents the poison must be eliminated. Gastric lavage may be indicated in cases of accidental ingestion. Dimercaprol (BAL) may be life-saving in mercuric bichloride intoxication, and prompt institution of therapy is important. High fluid intake and alkalinization of the urine are recommended for the prevention of renal damage by the sulfonamides. Some authors recommend alkalinization following hemolytic transfusion reactions.

In some cases, the primary condition causing the acute renal failure will result in severe shock due to depletion of plasma volume. In such cases, prior to the obvious development of oliguira, the lost blood or fluid should

be replaced. The timing of this replacement is of great importance and may prevent or reduce serious renal damage.

The severity and duration of the individual case of acute tubular necrosis is variable, but it is prudent to initiate a comprehensive and long-range therapeutic plan in each case as soon as the diagnosis is established. In mild cases, simple restriction of water, sodium chloride, potassium; and protein, together with the provision of adequate calories, such as carbohydrate, will result in a favorable outcome. However, in the majority of cases, the therapeutic result depends on careful daily assessment of fluid, electrolyte, nitrogen, and caloric balance by an experienced team of medical, nursing, and laboratory workers. (Robinson, G.C., Wong, L.C., Acute Tubular Necrosis in Infancy and Childhood: J. Dis. Chil., 95: 417-427, April 1958)

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Tuberculosis in the Neonatal Period

While it is categorically considered necessary to remove newborn infants from contact with tuberculous mothers whose pulmonary disease is in an active state, two important questions remain unanswered: (1) Should infants born of mothers with inactive tuberculosis be removed from contact with them if the tuberculous disease in the mother has recently been considered active? (2) What should constitute the proper diagnostic and therapeutic approach to an infant who is demonstrated to have been exposed to active tuberculosis in its mother?

Sixty infants born of mothers who had active pulmonary tuberculosis at the time of delivery, who recently had had active pulmonary tuberculosis or who had contracted pulmonary tuberculosis in early infancy, constitute the study. Nine infants received BCG vaccine. Twenty-one of the remaining 51 infants were infected with tuberculosis and 3 of these developed tuberculous meningitis. Death resulted in 1 of these cases. One other patient in the series died, but this patient who was separated from his mother at birth had apparently received poor general care. The patient was hospitalized with diarrhea shortly after birth and died at the age of 1 month. At autopsy, the diagnosis was pneumonia and inanition with no evidence of tuberculosis.

From the material at hand, it appears that contact of an infant with a mother who supposedly has inactive tuberculous disease and sputum negative for tubercle bacilli may not be as safe as expected. Nine of the 30 patients in this category became infected with tuberculosis and 1 died with tuberculous meningitis. Proof is not available to show that these infants were infected by the mother; however 1 of the 8 mothers was forced to return to the sanatorium for further treatment.

It cannot be said that temporary separation of an infant from a mother with active tuberculous disease is always successful in preventing infection of the child. Of the 10 infants who were separated from their mothers for periods ranging from 7 weeks to 2 years, or until the mother had noninfectious sputum and appeared to have arrested disease, 6 developed tuberculous infection. None of these infants, however, suffered serious tuberculous disease.

There was no case of clinical tuberculosis among the 9 patients in this series who received BCG vaccine. Six were immediately separated from the mother, however, and only 3 were kept in close contact. Although no conclusion can be drawn from this small group, Rosenthal has reported that among infants born of tuberculous parents, those who receive BCG vaccine have a more favorable prognosis than those who do not have the benefit of this prophylactic approach.

Grady and Zuelzer have suggested that infants born of mothers who have active pulmonary tuberculosis be given prompt antimicrobial therapy. The effectiveness of such an approach is questionable for Schmidt's work on simians has demonstrated that the institution of chemotherapy at the inception of infection may result only in prolongation of the incubation period. Fifty percent of his rhesus monkeys developed tuberculosis when the antimicrobial therapy was discontinued.

It would appear, therefore, that the best approach is: careful observation of the newborn infant with an immediate chest roentgenogram and tuberculin test; isolation from the mother for a period of 6 weeks; and BCG vaccination and isolation thereafter for a minimum of 6 weeks or until the mother's tuberculous disease is so controlled that contact with the infant is advisable.

The effectiveness of an approach involving careful observation only is exemplified in a group where there were 5 infants infected with tuberculosis at 11 weeks of age or less. One baby had widespread pulmonary tuberculosis at 19 days, 2 developed tuberculous pneumonia at 23 and 30 days, respectively, and one was found to have primary pulmonary tuberculosis at 5 weeks of age. Another infant developed a positive Mantoux reaction at 11 weeks of age. Only one of these patients died and this child who was infected at 30 days of age had later developed tuberculous meningitis in the era before the advent of isoniazid. (Kendig, E. L. Jr., Rodgers, W. L., Tuberculosis in the Neonatal Period: Am. Rev. Tuberc., 77: 418-421, March 1958)

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The printing of this publication was approved by the Director of the Bureau of the Budget, 16 May 1955.

Metastatic Carcinoma of the Neck

This study comprises 150 patients with neck metastases from head and neck primary cancers over a period of 8 years. The majority of primary lesions were of intraoral origin. Thirty-three arose from primary lesions within the neck and in five cases the primary site was undetermined. In support of the findings of others that the peak incidence of head and neck cancers is appreciably later than cancers in general and that the sex distribution is predominantly male, this study disclosed that the average age of all patients was 62.4 years and the sex distribution was 114 males and 37 females. If thyroid carcinoma were excluded from this study the preponderance of males would be more striking because 12 of the 14 thyroid carcinomas were in female patients.

The average duration of symptoms before medical consultation was 6.2 months. This compares favorably with carcinomas in general. However, because the majority of these lesions are surface tumors and can be seen by direct vision, physician and patient education should reduce this figure significantly.

The initial complaint of fully one-third (52 patients) arose from the metastatic disease and treatment was sought because of a lump in the neck. This finding is of special significance. A greater delay is possible in the diagnosis and treatment in this group because the metastatic lesion may go unrecognized as such. The physician who recognizes the possibility of malignant disease in these patients and institutes diagnostic procedures probably has a greater influence in the eventual outcome than any subsequent physician's efforts.

The physical findings of the majority of malignant tumors of the head and the neck are sufficiently characteristic to justify a tentative diagnosis. This is especially true if lymph nodes are involved. Once malignant change is suspected, the physician's course is dictated by the pressing need for surgical pathological support through biopsy. When the cervical mass is interpreted incorrectly as benign and biopsy is not utilized, a disheartening loss of time results which may consume the chance for cure. Biopsy will not replace diagnostic acumen or surgical judgment, but judiciously applied where cancer is a possibility, it will suppress the likelihood of error and safeguard the patient's chance for survival.

Biopsy procedures about the neck deserve special note regarding technique. If conventional incisional biopsy is performed, an appreciable obstacle to technique is created for the surgeon who is called upon to perform the neck dissection because the entire biopsy wound must be excised in continuity with the en bloc neck specimen. Further pathways are theoretically created which allow access of tumor cells to the superficial lymphatics of the neck—a process which is not attained by natural forces except in the very far advanced cancer growth.

Aspiration biopsy creates no technical problems for subsequent surgery or x-ray therapy and, although it theoretically violates the same barriers as does incisional biopsy, it has been the experience of those who have used this maneuver that no tumor spread has resulted from it. It is curious that critics who decry the use of aspiration biopsy and use it infrequently, should at once claim that any spread of tumor in their cases to overlying skin was via the needle tract, when the authors have used it extensively and have not seen this. Interesting, too, that one could locate or identify such a tract months later. The efficiency of aspiration biopsy adds support to its employment. Aspiration biopsy provided a diagnosis of malignant tumor in 96 of 101 of the presented cases. It is a short simple office procedure performed under local anesthesia with no morbidity.

Because metastatic cervical cancer encompasses many different malignant diseases, its treatment is variable and dependent upon factors, such as the site of the primary tumor, whether the primary tumor is controllable by surgery or x-ray, the operability of the cervical metastases, the presence or absence of distant metastases, and others. This is best illustrated by considering the most common of these lesions. Although surgery and radiation therapy are the only means available for a curative effort, head and neck cancers lend themselves particularly well toward controlling or palliative measures. It is pleasing to find also that patients in their eighth or ninth decade tolerate these procedures with very little difficulty and they should not be denied surgery solely because of age. In general, it has been found that excisional therapy, when feasible, is superior to radiation therapy, and that radiation therapy is most useful for nonresectable or recurrent tumor and for tumors of cell type which fall into the lymphoma class. (Kinsey, D. L., James, A. G., Bonta, J. A., A Study of Metastatic Carcinoma of the Neck, Ann. Surg., 147: 366-370, March 1958)

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Parietal Pleural Needle Biopsy

Pleural effusion is a common diagnostic problem. Many times an etiologic cause is immediately evident; however, in the remaining cases the physician may have to resort to all available methods, including thoracotomy, to arrive at a satisfactory solution. This article presents the results of needle biopsy of the parietal pleura and compares it with information obtained by other methods.

Pleural effusions can be secondary to localized extrathoracic or to systemic causes, such as renal disease, cirrhosis, disseminated lupus erythematosus, subdiaphragmatic abscesses, and pancreatitis. Intrathoracic causes may be infectious, neoplastic, traumatic, or due to congestive heart failure. In general, studies in these cases have been limited

to radiographic findings and examinations of the fluid obtained by thoracentesis. Total protein determinations, cell counts, specific gravity, and special chemical studies on the pleural fluid have been helpful, but they do not give an exact etiologic diagnosis. After extrathoracic causes. have been eliminated, these laboratory results, when coupled with the rest of the clinical findings, are of help to the physician. However, cytologic examinations for malignant cells and bacteriologic determinations are more conclusive.

Either because of the type of admissions to this hospital or because of the advanced age of the patients in this series the authors had no cases of pleural effusion proven to be secondary to tuberculosis. Pleural biopsies in cases of effusion secondary to tuberculosis have been especially rewarding because the condition can be diagnosed and therapy instituted before cultures can be obtained.

The results obtained from studies of malignant cells varies directly with the method used and the experience of the examiner.

With the introduction of needle biopsy of the parietal pleura by DeFrancis, Klosk, and Albano, an easy method of biopsy was made available which could even be carried out in outpatients. The results of 17 biopsies of the parietal pleura are presented and compared with other studies. There were 10 positive biopsy specimens in 14 cases of neoplasm and 3 noncontributory biopsy specimens in patients in whom a diagnosis has still not been established after one to one and one-half years. The method is useful but not fool-proof, and a negative biopsy specimen does not rule out tuberculosis or neoplasia. In a few cases, the final answer will only come from thoracotomy, long follow-up, or autopsy. (Welsh, J. D., Parietal Pleural Needle Biopsy: Arch. Int. Med., 101: 718-721, April 1958)

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The Swayback Syndrome

In this article are described the diagnostic features of a little discussed roentgenologic entity which properly may be called the "swayback" syndrome. The material collected was obtained during the course of routine interpretation of roentgenograms during the past year in a busy department of radiology in a general hospital. During this period, a total of 56 cases were collected with the classic and characteristic features of this syndrome. These cases were unselected, consecutive, and included patients sent to the authors for skeletal surveys with no back pain. Of the 56, adequate clinical records on 40 were available. There were 34 females and 6 males. The ages ranged from 42 to 87 years with an average age in the range of 64 years.

The diagnosis of the "swayback" syndrome is suggested clinically to the orthopedic surgeon, but is best made with certainty by the radiologist. The roentgen criteria consist of:

1. Increase in lumbar lordosis with an accompanying roundback deformity in the dorsal spine.
2. Closely situated or contiguous spinous processes in the lumbar area.
3. Eburnation about the spinous processes, particularly in the later stages with secondary bursal involvement.
4. Impingement of the inferior articular facets on the laminate below, with eburnation and marginal sclerosis about these sites.
5. Small joint arthritis manifested by destruction of the cartilage and marginal eburnation as well as exostosis formation.
6. Disk cartilage thinning.
7. Misalignment of the lumbar centra, particularly in the advanced stages.
8. Paucity of anteriorly situated exostoses involving the lumbar centra.

The authors have classified the roentgen findings into three major groups: mild, moderate, and severe. In this series, there were 12 mild, 11 moderate, and 17 severe cases. In the mild form, those cases were included which showed the characteristic postural changes of an accentuated lumbar lordosis with the spinous processes in the lumbar spine, close but not necessarily contiguous. In the moderate group, there were increase in the lumbar lordosis with the spinous processes contiguous, with or without eburnation, beginning impingement of the inferior articular facets on the laminae below, and early small joint arthritis. In the severe forms, the authors found considerable increase in the lumbar lordosis with contiguous spinous processes showing peripheral eburnation, varying degrees of impingement of the articular facets upon the laminae below with surrounding eburnation, definite small joint arthritis, degenerative disk disease, and varying degrees of misalignment. An almost uniform finding was a remarkable paucity of exostoses involving the anterior aspects of the lumbar centra.

The diagnostic features are quite apparent in routine frontal and lateral roentgenograms of the lumbar spine. Oblique roentgenograms may be added to further delineate the changes in the posterior small joints and the relationship between the inferior articulating facets and the laminae. In the authors' experience, these oblique roentgenograms usually are not necessary.

The authors believe that the "swayback" syndrome is generally responsible for symptoms of varying degrees of back pain, oftentimes quite disabling. An attempt was made to determine the frequency of significant

back pain in patients with "swayback" findings and to relate the various grades of "swayback" roentgenologically to the severity of symptoms. Half of the patients examined complained of back pain in varying degrees. An attempt to relate the physical findings to roentgenologic features was not contributory.

Although this report is of a preliminary nature, the "swayback" syndrome is a real roentgenologic entity. Some individuals showing the characteristic roentgen features of this syndrome may suffer from varying degrees of back pain as a result of the changes described while others may be asymptomatic. However, in spite of this lack of positive correlation, the importance of this entity should not be discounted. The roentgen findings of an increase in lumbar lordosis, contiguous spinous processes, inferior articular facets impinging on the laminae below, with small joint arthritis and resultant degenerative disk disease and misalignment, comprise a definite entity. The accurate description and evaluation of these findings by the radiologist will prove of service to the clinician in a number of instances where the cause of back pain might otherwise go unexplained. The radiologist's role in detecting this entity is manifestly important. (Jacobson, H.G., et al., The "Swayback" Syndrome: Am. J. Roentgenol., 79: 677-683, April 1958)

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Occupational Medicine

The opening session of the XII International Congress on Occupational Health, Helsinki, Finland, July 1-6, 1957, was held in Festival Hall, University of Helsinki. Professor Niilo Pesonen, Director General of the State Medical Board, greeted the delegates with the following remarks:

> Specialization is the distinctive feature not only of present day medicine, but also of other modern sciences. Particularly in the field of medicine, the tendency towards specialization has continuously increased during recent decades. This is due to the rapid development of medicine itself and to the new discoveries in various branches of medicine which have rendered it impossible for one man to have the entire field of medicine at his command.
>
> The same thing has been happening in the field of industrial medicine. The reason for this is to be found not only in the increased knowledge of occupational diseases and their proper treatment, but also in the vast expansion of modern industries which in recent years has been exceptionally rapid. The youngest of them, the atomic industry, has confronted health workers with new problems which are very difficult to solve. The

atomic industry with all its ramifications exposes its own employees to great and still partly unknown hazards. Moreover, this danger is not limited to the personnel actually working in the atomic industry, but also affects the surrounding population and, in fact, the whole of mankind. The study of the influence of these injurious factors, the treatment and care of the ailments caused by them, and the protection of mankind against their harmful effects again require special knowledge and lead to further specialization.

Specialization naturally leads to great advances in the treatment and care of the sick and in public health work generally. Thanks to specialization, many a sickness for which no remedies were available even ten years ago can now be cured. Furthermore, specialization has provided public health workers with new weapons against disease.

Side by side with this tendency to specialization and to a certain extent bound up with it there is another feature of present day medical research and treatment which deserves attention. Special experience in medicine alone is no longer sufficient to insure the best results. The help of experts in other sciences is essential to present day doctors. Thus, the physicians and other medical personnel are no longer working alone. Chemists, physicists, engineers, sociologists, psychologists, and many other experts in different branches of science, some of them quite remote from medicine, will all play an important part in solving medical problems. Without their collaboration, many recent discoveries would never have been possible. In this manner, other sciences have become integrated with modern medical research. Industrial medicine is no exception.

Thus, specialization on the one hand, and collaboration with other scientists on the other, are both indispensable factors in present day medicine. They offer at the same time the best guarantee of continuous progress towards ideal working conditions and a steady improvement in the health and security of the workers.

One should, however, not ignore the dangers involved in advanced specialization. In every science and numerous special branches, great synthesists are needed to combine the most essential findings of the different specialists into a coherent whole for the benefit of all mankind. Thus, even in the field of practical medicine, physicians are needed who are capable of seeing man as a whole. If all attention and efforts are concentrated on the care of certain ailments alone, man himself is easily forgotten. Maybe it is felt there is not time enough for the human being. Nevertheless, it is known that man is an indivisible entity who cannot be split up into his component parts—at least, if the object is to cure him.

Particularly in the field of industrial medicine, an employee may easily be looked upon as a mere cog in the machinery of an industrial

establishment. It is often forgotten that he is also a member of a family which he leaves early in the morning when he hurries to his work and to which he returns at night after a busy day. In smaller industries, where the same physician looks after the employees of a factory and also the people who live in the neighborhood, this danger does not exist. The matter is quite different in larger industrial establishments employing separate physicians who are only concerned with the workers as such. Under such circumstances, close cooperation between the medical personnel of the factory and the local doctors is very important.

As all able-bodied citizens are generally engaged in some sort of work and as every man or woman while working is exposed to various dangers, one cannot say exactly where occupational medicine begins and where it ends. In this way, occupational medicine overlaps with general medicine and those who have chosen occupational medicine as their specialty represent an important group among public health workers as a whole. Occupational medicine should, therefore, be seen against the background of public health and treated as an essential part of it.

It is sincerely hoped that in deliberations on the specific problems of occupational health the workers will be considered as members of society as a whole—even when they are working in very special conditions—and not merely as men or women operating a machine or driving a plow. If this is borne in mind, the results achieved will be of benefit to mankind. (OccMedDispDiv, BuMed)

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Occupational Medicine Course

A two-months' course in occupational medicine is being offered by the New York University Post-Graduate Medical School, Institute of Industrial Medicine, 15 September - 7 November 1958. This course is designed for physicians engaged in the practice of industrial medicine.

Medical Corps officers of the Regular Navy and Naval Reserve in the ranks of Commander and below who are interested in occupational medicine may submit an official request for this course to the Chief, Bureau of Medicine and Surgery in accordance with instructions contained in BuMed Instruction 1520.8 of 6 February 1956. Requests should reach the Bureau not later than 10 July 1958. (OccMedDispDiv, BuMed)

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Please forward requests for Change of Address for the News Letter to: Commanding Officer, U. S. Naval Medical School, National Naval Medical Center, Bethesda 14, Md., giving full name, rank, corps, and old and new addresses.

Poison Ivy Dermatitis

Medical News Letter, Vol. 31, No. 6, dated 21 March 1958, described "Poison Ivy Dermatitis." A letter received from the Professor of Zoology, San Jose State College, San Jose, Calif., Professor James P. Heath, gives further information. Parts of the letter are quoted "for the information of all hands."

> "Poison oak in California is Rhus diversiloba T&S, not R. Toxicodendron (an eastern form) according to Jepson's Manual of the Flowering Plants of California. This plant, far from being limited to "dry barrens, pinelands, and sands" is one of the most widespread herbaceous forms in the state. It ranges from 50 to 5000 feet in altitude and is known not only from such areas as the author describes, but in chaparral, oak woodlands, redwood forests, and similar relatively more moist areas.
> . . . . . The plant frequently occurs as a vine and I regularly show my classes in ecology such a specimen extending up over eighty feet in a tree. The plant often forms a large shrub but may also occur as a low ground cover. It is notably free of hairy covering which the author states one should expect. In fact, the bright glistening leaves often tempt strangers to pick the plant for decorative purposes, especially in the fall as they become scarlet.
> The plants are deciduous and are nearly as dangerous when bare of leaves as they are in spring and summer . . . . . "

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From the Note Book

1. The attention of All Hands is directed to the announcement of the Medcial Department Correspondence Course, "Insect and Rodent Control," which appears in the Reserve Section, page 30, of this issue. Editor.

2. Rear Admiral E. C. Kenney MC USN, Assistant Chief of the Bureau for Personnel and Professional Operations, represented the Surgeon General and the Bureau at the 39th Annual Meeting of the American College of Physicians. (TIO, BuMed)

3. Doctor H. T. Karsner, Research Advisor to the Surgeon General of the Navy, has been elected Honorary Fellow in the Aero Medical Association. Dr. Karsner is the eleventh person elected to Honorary Fellow in the 30 years' existence of the Aero Medical Association. One of the Nation's foremost Pathologists, he has been Research Advisor to Surgeons General of the Navy since 1949. (TIO, BuMed)

4. Captain C. P. Phoebus MC USN, member of the Executive Council of the Aero Medical Association, has been elected a Member and Selector of the International Academy of Aviation Medicine. As Special Assistant for Medical and Allied Sciences, Office of Naval Research, Captain Phoebus will represent the U. S. Navy on this group. The Selectors of the International Academy of Aviation Medicine include one representative each from France, Switzerland, Belgium, United Kingdom, Royal Canadian Air Force, U. S. Air Force, and U. S. Navy. There are also representatives from United States and Canadian civilian interests. Captain Phoebus was also elected President-Elect of the Space Medicine Branch of the Aero Medical Association. (ONR)

5. CDR P. J. Boyne DC USN presented a clinic at the annual meeting of the Southern California State Dental Association in Los Angeles on the 14th of April. CDR Boyne's clinic was entitled "The Use of Anorganic Bone Material in Oral Surgery." (CO 5th Dent Co., Force Troops, FMFPac)

6. On 7 April 1958, the Orthopedic Service of the U. S. Naval Hospital, NNMC, was host to the Washington Orthopaedic Club. The subjects presented were: (1) Non-union of Fractures of the Carpal-Navicular by LT J. W. Bickerstaff MC USN; (2) Patellectomy by LT J. A. Lynch MC USNR; (3) The Fate of Bone Graft in a Case of Nonstatic Pagets Disease by Captain H. T. Stradford MC USN. (NNMC)

7. The World Health Organization (WHO) with headquarters in Geneva, Switzerland, now groups 88 countries with the aim of protecting the health of all peoples. WHO works with national health services to prevent infectious disease (malaria, tuberculosis, syphilis, et cetera), and to train health workers. It gives technical assistance to improve sanitary conditions in over 100 countries, warns of outbreaks of epidemic disease, coordinates research, and recommends international standards for drugs and vaccines.

Dr. M. G. Candau is Director-General in charge of a staff (including field staff) of about 1000 professionals of 54 nationalities. WHO's budget contributed by Member States is $13,500,000 for 1958. WHO celebrates its 10th Anniversary this year at a Special Session of its governing body, the World Health Assembly to be held in Minneapolis beginning 26 May. (WHO)

8. Accurate records and sufficient data were available on the treatment of 2580 painful shoulders, of a total of more than 5000 cases for analysis. A detailed analysis of 803 frozen shoulders, 609 shoulders with "medium" and "large" calcium deposits and 887 shoulders characterized by abduction, pain, tuberosity, tenderness, and no loss of passive motion is presented. (Am. J. Surg., April 1958; P.H. Harmon, M.D.)

9. The problem of systolic murmurs in children and adolescents was considered in general and a review of the literature was made, Five hundred unselected children, between the ages of 4 and 17, had clinical and graphic studies made. From a clinical point of view, a medium or loud systolic murmur was found in 23. 3% of the cases and no significant difference was found between the sexes. Even though the majority of systolic murmurs were pulmonic, a fair number were heard at the apex and over the aortic area. (Ann. Int. Med., March 1958; A. A. Luisada, M. D., et al.)

10. Eighteen pregnant patients with heroin addiction and their newborn babies were studied. The cases were analyzed as to method of delivery, postpartum complications and treatment, fetal salvage and fetal deaths, birth weight, fetal complications and treatment. (Am. J. Obst. & Gynec., April 1958; S. O. Krause, M. D., et al.)

11. A series of 94 consecutive cyclodialyses employed in the surgical treatment of varied types of glaucoma is reviewed, with emphasis being placed on the evaluation of results obtained and complications encountered. The operative technique is described in detail. (Arch. Ophth., April 1958; M. W. Haisten, M. D., J. S. Guyton, M. D.)

12. A method of obtaining sputum from the respiratory tract of "normal" individuals, patients with chronic nontuberculous pulmonary disease, and patients with known or suspected malignancy is reported. The basis of this procedure involves the inhalation of warm, hydroscopic saline aerosols. (Dis. Chest, April 1958; H. A. Bickerman, M. D., E. E. Sproul, M. D., A. L. Barach, M. D.)

13. A method of surgical management of invasive cancer of the distal stomach by radical en bloc resection of the stomach, duodenum, head of pancreas and transverse colon with a method of alimentary reconstruction is described in Ann. Surg., March 1958; H. W. Scott, Jr., M. D., M. G. Weidner, M. D.

14. Stromal endometriosis is a primary type of uterine neoplasm which invades and obstructs the urinary tract. It should not be confused with the non-neoplastic entities of adenomyosis and ectopic endometriosis. The growth of stromal endometriosis is slow and its clinical course is one of benignity until obstruction of the urinary tract, the pelvic vasculature, and the lower bowel occurs. (J. Urol., March 1958; C. A. MacFarlane, et al.)

15. Osteomalacia is a disturbance of bone metabolism characterized by an inability of the body to lay down mineral salts upon the bone matrix. It may be diagnosed early radiologically by the presence of a radiolucent line occurring at a site of slight trauma in an otherwise normally mineralized bone. (Radiology, March 1958; M. LeMay, M. D.)

BUMED NOTICE 6260 1 April 1958

From: Chief, Bureau of Medicine and Surgery
To: All Ships and Stations

Subj: Microwave (radar) health hazards; health precautions for prevention of

This notice outlines the potential health hazards inherent in the use of microwaves (radar) and prescribes precautionary health measures designed to prevent damage to biological material due to overexposure.

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BUMED INSTRUCTION 6400.1 3 April 1958

From: Chief, Bureau of Medicine and Surgery
To: All Naval Hospitals

Subj: Amyotrophic Lateral Sclerosis Study by National Institutes of Health, cooperation with

This instruction provides for Navy support of this investigation by the Navional Institutes of Health.

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BUMED INSTRUCTION 5100.2 7 April 1958

From: Chief, Bureau of Medicine and Surgery
To: BuMed Management Activities

Subj: Protective footwear

Ref:
(a) SecNavInst 5100.7, Subj: Foot protection; requirements for (Notal)
(b) NCPI 190
(c) OpNav 34P1, Navy Safety Precautions, chap. 18, Sec. 1
(d) NavMed P-5040, Recommended Safe Practice for Hospital Operating Rooms (BuMedInst 5100.1A, encl (1)
(e) Military Specification MIL-S-3794, Shoes, Safety, Semi-conductive (Notal)
(f) NCPI 65.6-2

This instruction provides a compendium of current Navy Department directives and publications concerning protective footwear.

BUMED NOTICE 6010 9 April 1958

From: Chief, Bureau of Medicine and Surgery
To: U. S. Naval Hospitals

Subj: Ward Data Record and Night Report Cards; availability of

Ref: (a) BuMedInst 6010. 3, Subj: Nursing administrative procedures; maintenance of ward records

This notice announces the availability of subject forms.

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BUMED INSTRUCTION 6120.13 11 April 1958

From: Chief, Bureau of Medicine and Surgery
To: Commandants, All Continental Naval Districts

Subj: Procurement of services of civilian physicians to conduct physical examinations (excluding those for extended active duty) of members of the Naval Reserve not on active duty

Ref: (a) ManMed Chap. 15
(b) AR 40-503 Physical Standards and Physical Profiling for Enlistment and Induction

This instruction provides information relating to the utilization of civilian physicians to conduct physical examinations at isolated Naval Reserve Training Centers where no other authorized medical personnel are available.

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Policy

The U. S. Navy Medical News Letter is basically an official Medical Department publication inviting the attention of officers of the Medical Department of the Regular Navy and Naval Reserve to timely up-to-date items of official and professional interest relative to medicine, dentistry, and allied sciences. The amount of information used is only that necessary to inform adequately officers of the Medical Department of the existence and source of such information. The items used are neither intended to be, nor are they, susceptible to use by any officer as a substitute for any item or article in its original form. All readers of the News Letter are urged to obtain the original of those items of particular interest to the individual.

DENTAL SECTION

Topical Application of Sodium Fluoride

Reports reviewed in the Bureau of Medicine and Surgery indicate that some Navy and Marine Corps activities outside the continental limits of the United States are providing topical sodium fluoride treatments to the teeth of dependent children for the purpose of preventing or inhibiting dental caries.

Although recent research has shown evidence that the use of stannous fluoride may be effective with fewer applications, the U. S. Public Health Service and the Council on Dental Therapeutics of the American Dental Association have not yet accepted its use as the treatment of choice.

The following technique, as recommended by the U. S. Public Health Service and the American Dental Association, should be used in the application of sodium fluoride to the teeth of children, ages 3, 7, 10, and 13.

1. Provide oral prophylaxis.
2. Isolate teeth with cotton rolls.
3. Dry teeth with compressed air.
4. Wet crown of teeth with 2% solution of sodium fluoride; allow to dry for three minutes.

The second, third, and fourth applications are made at intervals of approximately one week in the same manner except that the oral prophylaxis is not required.

In general, it may be said that there is no specific advantage in providing topical application of sodium fluoride to the teeth of children who reside in areas where communal water supplies have been fluoridated.

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Dental Paper Towels in Medical Stock List

It has been brought to the attention of the Dental Division, Bureau of Medicine and Surgery, that some dental activities are procuring dental disposable paper towels or bibs by open purchase requisition. Paper towels are available in the Medical Stock List under FSN-8540-299-8765, Towel,

Paper, Disposable, Dental, 100's. Approximately 19 in. by 14 in., these towels may be used, where indicated, as a supplement for FSN-7210-717-8075, Towel, Hand, Dental, Grey, primarily as a protective covering or bib for patients receiving dental treatment. It should be noted that because of the need for sterile cloth towels for patient draping in oral surgery procedures, paper towels or bibs should not be used in oral surgery departments.

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Board Certification

CDR Peter F. Fedi, Jr., DC USN was certified recently as a Diplomate of the American Board of Periodontology. CDR Fedi is on duty at the U. S. Naval Station, Treasure Island, San Francisco, Calif.

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SUBMARINE MEDICINE SECTION

Recompression Chamber at Sasebo, Japan

As a follow-up on an earlier article concerning diving in Japan, Captain L. L. Bean MC USN, Station Hospital, Sasebo, Japan, calls attention to the availability of a recompression chamber near the dry docks in northwest Sasebo, Japan. It is maintained and manned by personnel attached to U. S. Navy ships in that area (USS LUZON and USS HECTOR) and attended by Medical officers attached to the U. S. Naval Station Hospital.

It is, presumably, a Japanese chamber. It has been used eight times in recent months for treating Japanese divers. Captain Bean confirms the earlier observation of Captain Holler that Japanese divers disregard a number of safety practices required by U. S. Navy procedures.

The latest case treated at Sasebo was flown from Taehibana, Takushinia Prefecture, to Sasebo by a combined Marine-Air Force airlift. The patient developed decompression illness after a reported eight hours at 120 feet searching for sea shells. Japanese physicians recognizing the situation appealed to U. S. sources for aid. The patient was flown part way

by plane and part way by helicopter. Information available at this time indicates the patient was improved by recompression. A final status report is not available.

Comment on this case: Eight hours at 120 feet is a gross exaggeration of safe diving practices. If it followed the usual Japanese practices the decompression given was inadequate. Adequate decompression from such a dive would take several hours and be most unpleasant to accomplish with the diver in his suit in the water. Attempts to use surface decompression for a dive of this depth and duration would be dangerous.

When diving casualties are transported by air to a recompression chamber for treatment, it is most desirable the flight be at the lowest altitudes compatible with flight safety. The reduction of barometric pressure with altitude aggravates the basic difficulty and may even be the determining factor in changing a serious case to a fatal case.

All activities having recompression chambers are urged to obtain a supply of the revised report form, Report of Decompression Sickness and All Diving Accidents (NavMed-816, rev. 2-55, Reports Symbol Med 6420-1) These reports should be made in duplicate. The original should be sent to Bureau of Medicine and Surgery (Attention, Code 75) and the copy to Experimental Diving Unit, Naval Gun Factory, Washington, D. C. It is important that all diving accidents be reported on this form when the trauma is directly related to the diving. Trauma of a mechanical nature aside from that directly related to diving, e.g., fractures arm due to falling timber, should be reported as it would be otherwise, but, in addition, should be identified on the F card and in the health record as having been received while engaged in diving activity or underwater work.

All accidents and casualties of any sort related to diving and diving activity should be covered by an appropriate entry in the health record for the protection of the interests of the individual as well as the Government.

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Nautilus Plank Owners Plate

HMC Ernest P. Resner has forwarded to the Bureau of Medicine and Surgery for its retention the Medical Department Plank Owners plate from USS NAUTILUS (SSN-571). This 3-1/2 x 4 inch stainless steel plate bears the names: J. H. Ebersole LT (MC), E. P. Resner HMC, F. R. Statzula HMC.

The plate was presented to Resner by the Commanding Officer upon his departure from NAUTILUS to commence studies at the University of Rochester, Rochester, N. Y. The plate will be mounted and displayed in the office of the Submarine Medicine Division at BuMed.

RESERVE SECTION

Revised Correspondence Course - Insect and Rodent Control

The Medical Department correspondence course, Insect and Rodent Control, NavPers 10705-A is available to Regular and Reserve officers and enlisted personnel of the Medical Department of the Armed Forces, as well as officers of the United States Public Health Service and allied foreign medical department officers. This course consists of two (2) objective type assignments and is evaluated at six (6) Naval Reserve promotion and/or nondisability retirement points.

Advances in knowledge of the life history and habits of pests, the introduction of new materials in building construction, and the discovery of new chemical agents have been utilized in combination to broaden the understanding of means of controlling disease vectors. This course provides Medical Department personnel with information pertaining to insects and rodents—their living habits, the manner in which they spread disease, and the diseases with which they are associated. It includes instructions for proper methods utilized in preventing and correcting infestation. It indicates what poisons should be used to control various kinds of pests and the dangers involved in the use of each poison. It also advises on methods of handling materials to avoid dangerous results.

Naval Reserve personnel who previously completed the correspondence course entitled, Insect, Pest, and Rodent Control, NavPers 10705, will receive additional credit for completing this course. Applications for the course should be submitted via applicant's command to the Commanding Officer, U. S. Naval Medical School, National Naval Medical Center, Bethesda 14, Md. (Attn: Correspondence Training Division)

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AMA Meeting in San Francisco

Eligible inactive Naval Reserve Medical Corps officers will receive retirement point credit for attendance at sessions of the Military Medicine Section of the American Medical Association Annual Meeting to be presented during the mornings of 25-26-27 June 1958 at the new coliseum in San Francisco. An outstanding program presenting subjects of military significance has been planned. Among the prominent authorities on Military Medicine

who will appear as speakers is the Honorable Frank B. Berry, Assistant Secretary of Defense (Health and Medical). Some of the subjects included in the program are:

Biometric Test on Nuclear Weapons and Its Significance to Nuclear Medicine

The Acute Radiation Syndrome in Man: Its Military and Civil Defense Aspects

Late Effects of Radiation - Specifically Vascular and Neoplastic Changes

Current Status of Experimental Therapy of Acute Radiation Injury Utilizing Spleen and Bone Marrow Preparations

Radiological Hazard Evaluation - A Critical Review of Present Concepts and a New Approach Thereto

Microwave Effects - A Report on the Progress of the Air Force Program Investigating the Biological Effects of Electromagnetic Radiation

Department of Defense Activities - Health and Medical Activities During Past Year

Panel on Reserve Affairs - Your Future Medical Reserve—What It Means to You

To insure proper accreditation, inactive Naval Reservists must register daily with the authorized military representative present.

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PREVENTIVE MEDICINE SECTION

What Has Happened to Quarantine?

A century ago, harsh and unreasonable quarantine regulations were a constant terror to the traveler and the merchant. Yet they were still powerless to check the great plagues of history. Only when scientists obtained precise knowledge about the cause and spread of infectious diseases was it possible to find less drastic and more effective ways of preventing epidemics.

In the last 10 years, the countries of the world have agreed on a uniform set of regulations which apply scientific knowledge to give protection against pestilential disease. Nowadays, quarantine has become a mere shadow of its former grim self.

From the fourteenth century until the end of the nineteenth, quarantine measures were drastic, harsh, and stupid; due partly to gross ignorance of the causes and mode of spread of pestilential diseases and partly to fear induced by the severity of epidemics which spread with commerce to many parts of the world and killed millions yearly in many countries.

The Great Epidemics

Cholera which had ravaged Asia for centuries spread to Europe and even to America in severe and widespread epidemics between 1830 and the turn of the present century.

The greatest killer was plague, the Black Death spread mainly by the fleas of the black rat and other rodents in close contact with man and his habitations, which occurred in pandemics throughout the world from the sixth century until about 1840 and, during such periods, brought trade and social life almost to a standstill.

The louse-borne diseases, typhus and relapsing fever, were worldwide scourges from time immemorial and pandemics occurred, especially in times of famine and strife, until the end of World War I when the louse was incriminated as the carrier of these diseases. The prevalence of these diseases was not surprising when lousiness was general and such a famous scholar as Dr. Samuel Johnson (1708 - 1784) averred that no man was healthy unless he had several lice on his person.

Smallpox epidemics had for ages occurred among peoples in all climates, killing or disfiguring countless victims and—before vaccination was practiced at the beginning of the nineteenth century—pock-marked faces were as common in Europe as they are in Asia and Africa today.

One of the great plagues of the world for more than 200 years was yellow fever, first recognized as a disease entity in the seventeenth century. The tropical and subtropical regions of the Americas were subject to devastating epidemics while serious outbreaks occurred as far away from the endemic centers in West Africa and the Americas as Spain, France, United Kingdom, Italy, and Southern United States.

Yellow fever took deadly toll of the companies of ships which visited West Africa and tropical America and it was these ships which carried the disease, because they remained infected throughout their journeys by the presence of yellow-fever carrying mosquitoes on board that spread the disease at ports of call.

The term "quarantine" was originally applied in the Middle Ages to the 40 days' compulsory isolation or detention period of persons and

merchandise which had been in contact with, or exposed to, these pestilences. The procedure was adopted with the mistaken idea that these diseases were spread entirely by contagion and that this would dissipate itself over a period of 40 days.

Death Penalty for Quarantine Offenders

The quarantine practice up to almost the end of the nineteenth century was to refuse the entry to port of infected ships or to keep them in the strictest isolation offshore for some 40 days and to place their crews and passengers for a similar period in quarantine stations which were virtually no better than prisons. The ship's goods were exposed on the decks and turned over daily during the quarantine period; if none of the operators contracted the disease, the merchandise was considered free from infection.

In many ports, the procedure was reduced to the simple expedient of locking up and isolating everybody and everything for periods up to 40 days. So strict were these regulations that the death penalty was applied to offenders, such as those communicating with persons in quarantine.

A classical example was the Italian ship "Matteo Bruzzo" which left Genoa for Montevideo in 1884. Cholera broke out on board during the voyage and permission to land was refused in South America. The ship returned to Italy and was quarantined off a small island near Elba. Not until 4 months after starting their journey were the passengers and crew allowed to disembark at Leghorn some 78 miles from Genoa.

No progress was made in alleviating these quarantine conditions until the latter half of the nineteenth century following two conferences (1851 and 1859) convened by the French Government and attended by diplomats and physicians of a dozen European States.

Meager Scientific Facts

These conferences showed some enlightenment in the approach to the problem of quarantine. The different theories of epidemiology of infections and the value of quarantine were discussed in great detail but, unfortunately, there was not sufficient agreement to establish a convention thereon. It was, however, the first time that the principles and rules for a draft International Sanitary Convention were formulated to promote uniformity in quarantine procedure.

The recommendations made included the freedom from quarantine of ships with clean bills of health, agreed minimum and maximum periods of quarantine for different pestilential diseases, acceptance of infected ships at ports, and the raising of the status of quarantine stations from prison to hospital standards.

Subsequently, three more international conferences were held. Those of 1866 and 1874 took place in Europe and dealt with cholera; that in 1881 was held in the United States and was concerned mainly with yellow fever. No conventions resulted from any of these conferences for as yet scientific facts were meager.

However, during the next decade the biological discoveries by Pasteur and Koch regarding germs and disease proved epoch making and revolutionary. In 1884, Koch proved that cholera was due to infection with a specific germ, but it was not until after the Seventh International Conference in 1892 that the First International Convention which dealt with Mecca Pilgrimage was signed.

Phenomenal Progress

Now the interest of governments and health authorities of many states was really aroused and three international conferences were held in rapid succession in 1893, 1894, and 1897, resulting in further conventions regarding cholera and plague. In 1894, Yersin and Kitasato proved that plague was due to a bacillus, while Ogata showed that fleas could transmit the disease; later the rat was identified as a reservoir of the infection. In 1903, a convention was ratified in Europe consolidating the four previous conventions. This was followed in 1905 by a somewhat similar convention in America.

During the first half of the present century phenomenal progress was made by bacteriological and epidemiological discoveries regarding the pestilential and most of the other infectious diseases. This gave such a fillip to interest in international health matters that in 1907 an international organization called the Office International d'Hygiene Publique was established in Paris.

At a conference attended by representatives of 41 countries in 1912 a new convention was approved to replace that of 1903 and in this quarantine practices were made less stringent. Owing to World War I, the Convention did not become operative until 1920 and this was further modified by the 1926 Convention.

The Era of Air Travel

With the development of international aviation, it became necessary to provide health regulations for this form of transport; so, in 1933, the First International Sanitary Convention for Aerial Navigation based on that of 1926 for ships was established. These two Conventions were amended in 1944 by the United Nations Relief and Rehabilitation Administration.

Those who had to apply these health regulations practically considered that they still caused much unnecessary delay to trade and travel both by

sea and air—particularly air. In 1946, a new and more enlightened era started when the World Health Organization by virtue of its constitution and other agreements was given authority to formulate and adopt regulations to prevent the international spread of disease.

This was a favorable time for the World Health Organization to enter the picture of international control of epidemic diseases because by 1946 the causal microorganisms of all the pestilential diseases were known as were also their life histories and modes of transmission, including the agency of insect and animal vectors. In addition, the immunizing powers of the vaccinations against yellow fever, smallpox, and cholera had been established as had the value of certain insecticides and other sanitary measures in dealing with the insect carriers of plague, typhus, relapsing fever, and yellow fever.

Limiting Quarantine Measures

A wealth of relevant facts was available and most of the pieces of the jig-saw puzzle regarding the causes and transmission of these diseases had been fitted into place. What was required now was a practical and realistic approach to the problem of international health control so as to limit quarantine measures to an effective minimum with the least possible interference with the speed of trade and travel—especially at transit points.

The World Health Organization created an Expert Committee on International Epidemiology and Quarantine to review existing conventions and combine them into a single body of regulations covering the needs of all travelers including sanitation at airports. As a result, the International Sanitary Regulations were adopted by the World Health Assembly in May 1951 and came into force on 1 October 1952. Certain amendments were made in 1955 and 1956

These regulations reduced quarantine procedures to a minimum compatible with existing sanitary conditions. The only immunizations made obligatory were those of proven value: namely, vaccination against yellow fever, smallpox, and cholera. Reliance was placed on disinfection of persons and goods for protection against the spread of the louse-borne and flea-borne diseases: typhus, relapsing fever, and plague. The irksome bills of health were abolished for ships and aircraft as were the personal declaration of movements during the 10 days before arrival at destination; the taking of rectal swabbings from those arriving from cholera endemic areas was prohibited. (Sir Harold E. Whittingham, What Has Happened to Quarantine: World Health Day, WHO, 7 April 1958)

* * * * * *

Cockroach Control in Naval Hospitals

(Due to its length, this article will be presented in three consecutive issues of the Medical News Letter. The subject matter is directed primarily to the problem of cockroach control in naval hospitals; however, it should be noted that the same basic principles and methods apply to any cockroach control situation, particularly in food-service establishments, such as officers' clubs, cafeterias, messhalls, and galleys. The basic material for the preparation of this article was provided by the Navy Disease Vector Control Center, NAS, Jacksonville, Fla.)

1. Introduction

a. Cockroaches of one species or another are probably the most commonly and persistently troublesome pests encountered indoors. Additionally, they are no respectors of premise types and may even be found annoyingly abundant in structures noted for high sanitary standards, such as hospitals, dispensaries, and clinics.

b. Hospital cockroach infestations constitute an especially serious problem for a number of reasons. Chief among these are:

(1) Most individuals assume cockroaches to indicate the presence of uncleanliness, substandard sanitation, and poor housekeeping.

(2) They often cause undesirable anxiety and anguish. In some cases, this may even lead to the development of true entomophobia (fear of insects), a condition which certainly contributes nothing to patient comfort and recovery.

(3) On occasion, cockroaches defile, contaminate, or damage food, linens, books, utensils, and other supplies and equipment and, therefore, are of health or economic importance.

(4) Where numerous, they are always objects of suspicion as mechanical transmitters of pathogenic organisms. For example, numerous harmful microorganisms have been isolated from the appendages, body surface, and alimentary canal of cockroaches. Some investigators have actually implicated cockroaches in outbreaks of gastroenteritis in hospitals.

c. Regardless of the reason given, no hospital department wishes to become or to remain infested; therefore, certain rules and procedures aimed at both prevention and control of cockroaches are needed.

d. In many respects, effective cockroach control in hospitals constitutes a special problem unlike that encountered elsewhere. In part, this is due to the presence of specialized situations where the use of normal pest control measures is either difficult or impossible. For example, there are spaces which can seldom or never be completely evacuated and there are other areas where the better insecticides cannot be used because of toxicity hazards. The other part of the problem is administrative. The interrelationship of the central administration, the professional staff, the nursing service,

the ward personnel, and the patients and its total effect upon what can be accomplished in the various types of hospital spaces is complex and not always as manageable as adequate control requires.

2. Kinds of Cockroaches

Before one can proceed with a cockroach preventive and control regimen, it is first necessary that a few of the most common species be recognized and their living habits understood. Those which are briefly described here are the most notorious from the standpoint of numbers, frequency, and affinity for indoor habitats. This is true regardless of latitude, climate, or elevation because the heated building serves their purpose as well as the steaming tropics and a freight elevator makes a fine cockroach conveyance. Because they are generally omnivorous, their diet is not greatly restricted by any menu offered.

a. German cockroach, Blattella germanica (L.)

(1) Appearance. The late egg stage is passed in a dark yellowish brown to tan colored capsule or egg case which is carried, protruding from the abdomen, by the female for about 2 weeks until, or shortly before, the eggs hatch. The female produces an average of 6 capsules, each containing about 40 eggs. The young (nymphs) pass through seven molts in 6 to 8 weeks. The life span is 3 to 5 months with 2 to 4 generations a year. The adult is dark tan or straw colored, about one-half inch long, and distinctively marked with two longitudinal dark stripes near the head.

(2) Habits. This species is the one most commonly found indoors, especially in and around food-service spaces and facilities. Infestation is a recurring problem in galleys, messhalls, diet kitchens, exchange snack bars and cafeterias, coffee messes, bakeries, butcher shops, vegetable preparation rooms, store rooms, and potato lockers; and frequently occurs on hospital wards in diet kitchens, food-service carts, bed stands, lockers, soiled laundry hampers, and washrooms. Because of its size and wide distribution, the German cockroach is easily carried into the hospital with provisions, especially fresh produce, bakery goods, soft drink cases, food and drink vending machines of many sorts, and even laundry. It frequents secluded recesses in the walls, wood and metal trim, fixtures, electrical applicances, furnishings, and other like haunts.

b. Brown-banded cockroach, Supella supellectilium (Serv.)

(1) Appearance. The dark reddish-brown egg capsules, containing an average of 15 eggs, are securely glued by the female in cracks, corners, and angular locations in furnishings, fixtures, clothing, and draperies where hatching takes place. Each female produces an average of 10 egg capsules. The young pass through 6 to 8 molts in about 3 months. This species is lighter in color and slightly smaller than the German cockroach, being somewhat less than one-half inch long. Two light yellow cross bands near

the base of the adult's wings and two transverse light bands on the dorsal surface of the nymphs give this species its name. The female is quite broad with short wings while the male is more slender with the wings extending beyond the tip of the body.

(2) Habits. This species prefers living, dining, and bedrooms and closets of dwellings, hotels, and motels; and is often found on hospital wards. It is more secretive and less obtrusive in habits than other cockroach species, hiding in cracks of woodwork, in furniture, drawers, lockers, wardrobes, closets, beds, and draperies. It may, however, infest all parts of the premises. It is not considered a "food-service-area" species as is the German cockroach.

c. American cockroach, Periplaneta americana (L.)

(1) Appearance. The dark reddish-black egg capsule, containing an average of 15 eggs, is firmly cemented to various substrates and often covered with debris. An average of 34 capsules are produced by each female. The young emerge in approximately 35 days and molt 9 to 13 times over a period of 10 to 16 months before finally becoming mature. Hence, the life cycle takes an average of 14 months and the total life span may be as long as two and one-half years in duration. The adult is dark reddish-brown, about one and one-half inches long, and the anterior dorsal plate behind the head has a conspicuous yellow posterior border stripe.

(2) Habits. This cockroach has particularly filthy habits, frequently "migrating" from shelters or breeding sources to food. It favors and becomes abundant in such places as damp basements, restaurants, bakeries, packing and slaughter houses, food stores, crawl spaces under dwellings and other buildings, and sewage disposal plants. It often occurs in prodigious numbers in dumps, sewer manholes and conduits, and in steam tunnels and other subfloor conduits in galleys. Therefore, its requirements for subsistence are met where there is a combination of food, warmth, dark seclusion, and high humidity. As previously noted, it commonly leaves these environs in search of food—a habit that makes the American cockroach a potentially dangerous disease vector or vehicle. Its presence is often first recognized from the hard, dark, one-eighth-inch long fecal pellets which it drops.

d. Australian cockroach, Periplaneta australasiae (F.)

This species is quite similar in appearance to the American cockroach except the adults have a yellow stripe along one-third of the outside margin of the forewings and measures only about one and one-quarter inches long. Habits are also similar, however, the Australian cockroach is not as commonly found indoors and has a more limited distribution. This cockroach can be particularly objectionable because of its unsightly, liquid, fecal splotches.

e. Other cockroaches

Several other species of cockroaches occasionally infest hospital premises. Those which are more likely to be encountered are:

PICTORIAL KEY TO SOME COMMON ADULT COCKROACHES

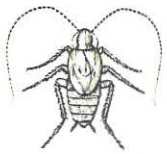
SMALL, ABOUT 5/8" OR SHORTER

PRONOTUM WITH 2 LONGITUDINAL BLACK BARS

GERMAN COCKROACH
(Blattella germanica)

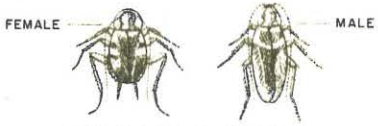
PRONOTUM WITHOUT LONGITUDINAL BLACK BARS

WINGS COVERING ABOUT HALF OF ABDOMEN PRONOTUM ABOUT 1/4 INCH WIDE



WOOD ROACH
(Parcoblatta spp.)

WINGS COVERING NEARLY ALL OF ABDOMEN OR EXTENDING BEYOND. PRONOTUM NARROWER



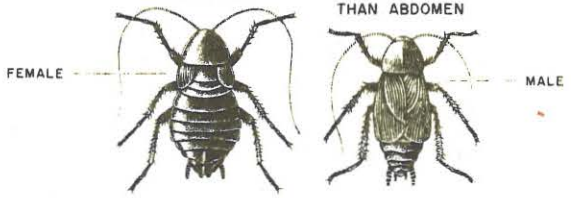
BROWN-BANDED COCKROACH
(Supella supellectilium)

MEDIUM TO LARGE, LONGER THAN 5/8 INCH

WINGS ABSENT, OR SHORTER THAN ABDOMEN

WINGS ABSENT

WINGS SHORTER THAN ABDOMEN

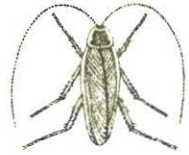


ORIENTAL COCKROACH
(Blatta orientalis)

WINGS COVERING ABDOMEN, OFTEN EXTENDING BEYOND

PRONOTUM MORE THAN 1/4 INCH WIDE

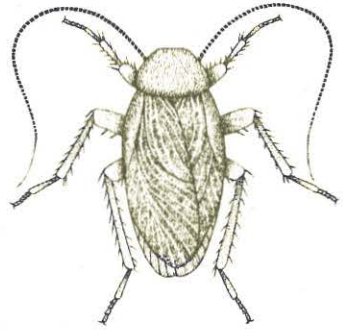
PRONOTUM ABOUT 1/4 INCH WIDE WITH PALE BORDER



WOOD ROACH
(Parcoblatta spp.)

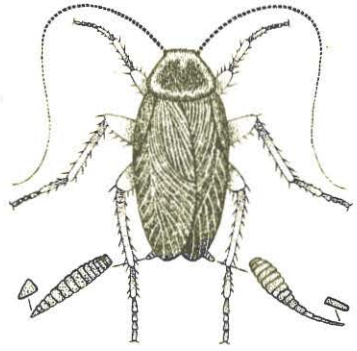
FRONT WING WITHOUT PALE STREAK. PRONOTUM SOLID COLOR, OR WITH PALE DESIGN ONLY MODERATELY CONSPICUOUS

PRONOTUM SOLID DARK COLOR. GENERAL COLOR VERY DARK BROWN TO BLACK.



SMOKY BROWN COCKROACH
(Periplaneta fuliginosa)

PRONOTUM USUALLY WITH SOME PALE AREA. GENERAL COLOR SELDOM DARKER THAN REDDISH CHESTNUT



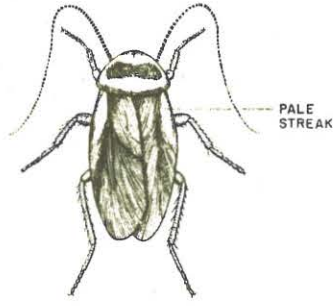
LAST SEGMENT OF CERCUS NOT TWICE AS LONG AS WIDE

BROWN COCKROACH
(Periplaneta brunnea)

LAST SEGMENT OF CERCUS TWICE AS LONG AS WIDE

AMERICAN COCKROACH
(Periplaneta americana)

FRONT WING WITH OUTER PALE STREAK AT BASE. PRONOTUM STRIKINGLY MARKED



AUSTRALIAN COCKROACH
(Periplaneta australasiae)

PREPARED BY
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PUBLIC HEALTH SERVICE
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ATLANTA, GEORGIA
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Oriental cockroach, Blatta orientalis (L.)
Smoky-Brown cockroach, Periplaneta fuliginosa (Serv.)
Surinam cockroach, Pycnoscelus surinamensis (L.)
Brown cockroach, Periplaneta brunnea (Burm.)
Florida woods cockroach, Eurycotis floridana (Walk.)

Most of the cockroaches listed here can be readily identified without the aid of magnification by using the Pictorial Key to Some Common Adult Cockroaches. In all instances, it is best to identify the species before proceeding with control measures; such a step provides a means for determining where, when, and how to apply these measures for maximum effectiveness. When there is doubt as to identity, determining the offending species is well worth the effort.

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